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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/828,740	MARTIN ET AL.	
	Examiner	Art Unit	
	Lana N. Le	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 December 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23,25 and 26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23,25 and 26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-2, 5-10, 12 are rejected under 35 U.S.C. 102(b) as being unpatentable over Cox (GB 2,081,543) in view of Arayashiki (JP 2002/359,543A).

Regarding claim 1, Cox discloses a reconfigurable filter (11) comprising: a plurality of elements (13-17, 19-23) including a configurable element (14-16) and configured to provide a filter circuit based on an interconnection of the plurality of elements (13-17, 19-23), the configurable element (14-16) including at least two filter components (15, 16) and a switch (14) configured to selectively couple one of the at least two filter components (15, 16) to the another of the plurality of elements (17 of stage 1, 13-17 of stage 2&3, 19-23); and a switch control module (32) configured to generate a switch control signal (control input signal to switch 14) to control the switch (14) in the configurable element (14-16) to selectively switch between two filter components (15 and 16), a value of the configurable element (15, 16) based in part on the switch control signal (page 2, column 2, line 113 - page 3, col 1, line 46). Cox does not disclose the switch generate a pseudo random switch

control signal based in part on a percentage of time that the switch control signal selectively couples a first of the two filter components to the filter circuit. Arayashiki discloses a filter comprising a switch control module (7) which generate a pseudo random switch control signal based in part on a percentage of time that the switch control signal selectively couples a first of the two filter components (1, 9) to another of the plurality of elements (see abstract; paras. 11-21; fig. 1; paras. 11-21). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a pseudo random signal in order to control the switch according to a pseudo random sequence as suggested by Arayashiki.

Regarding claim 2, Cox and Arayashiki disclose the filter of claim 1, wherein Cox disclose the filter circuit comprises an active filter circuit (active filter 11 due to amplifier component 13).

Regarding claim 5, Cox and Arayashiki disclose the filter of claim 1, wherein Cox disclose the configurable element comprises two like components (15 & 16) of different values (page 2, col 2, lines 118-126) and the switch (switch 14 after input 33), and wherein the switch (14) is configured to couple one of the two like components to the filter circuit (13-17, 19-23) (page 3, col 1, lines 36-46).

Regarding claim 6, Cox and Arayashiki disclose the filter of claim 1, wherein Cox disclose the configurable element comprises two like components of different values (page 2, col 2, lines 118-126), each of the like components selected from the list comprising a resistor, a capacitor, an inductor, and a transconductance element (page 2, col 2, lines 118-126).

Regarding claim 7, Cox and Arayashiki disclose the filter of claim 1, wherein Cox disclose the switch control module (32) generates the switch control signal having a switch control frequency greater than a passband frequency of the filter (see figs. 3&5; page 2, col 1, lines 10-30, lines 40-58).

Regarding claim 8, Cox and Arayashiki disclose the filter of claim 1, wherein Cox disclose the switch control module () generates the switch control signal having a switch control frequency that lies outside a passband of the filter (see figs. 3&5; page 2, col 1, lines 10-30, lines 40-58).

Regarding claim 9, Cox and Arayashiki disclose the filter of claim 1, wherein Cox disclose the switch control module generates a periodic switch control signal (page 2, col 1, lines 52-65).

Regarding claim 10, Cox and Arayashiki disclose the filter of claim 9, wherein Cox disclose the switch control module varies a duty cycle of the periodic switch control signal (page 2, lines 52-65).

Regarding claim 12, Cox and Arayashiki disclose the filter of claim 1, wherein Cox disclose the filter circuit comprises a lowpass filter, and the switch control module is configured to generate the switch control signal to produce one of a plurality of predetermined frequency responses (page 3, col 1, lines 17-25; page 2, col 1, lines 40-64).

5. Claim 20 is rejected under 35 U.S.C. 102(b) as being anticipated by Cox (GB 2,081,543) in view of Wang (US 6,351,229).

Regarding claim 20, Cox disclose a reconfigurable filter (fig. 6) comprising:

at least one configurable element (14) having a value based in part on a fractional period (figs. 3&5) in which a control signal (from 32) is at a first signal level (page 2, col 1, lines 40-65); and a filter element (15, 16) coupled to the at least one configurable element (14) to produce a filter circuit (page 2, col 1, lines 40-65). Cox does not disclose a delta sigma modulator a delta sigma modulator configured to generate a pseudo random output as the control signal, the delta sigma modulator including a variable voltage source, and an output of the variable voltage source controlling a distribution of first and second signal levels output by the delta sigma modulator. Wang discloses a delta sigma modulator a delta sigma modulator configured to generate a pseudo random output as the control signal, the delta sigma modulator including a variable voltage source, and an output of the variable voltage source controlling a distribution of first and second signal levels output by the delta sigma modulator (fig. 3A, 7A,B column 4, line 39 – col 6, line 45; col 11, line 23-42). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the delta sigma modulator in order to have a specific type of generator to generate a pseudo random sequence control signal.

5. Claim 3-4, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cox in view of Arayashiki in view Chang et al (US 6,975,846) (hereinafter Chang).

Regarding claim 3, Cox and Arayashiki disclose the filter of claim 1, wherein Cox and Arayashiki do not disclose the filter circuit comprises a passive filter circuit. Chang disclose a passive filter circuit 250 (fig. 1; col 3, lines 10-17).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Cox's filter be a passive filter due to the passive components of Cox's resistors and capacitor in order to use an alternate embodiment as suggested by Chang with simplified circuitry component by implementing the amplifier outside of the filter circuit.

Regarding claim 4, Cox and Arayashiki disclose the filter of claim 1, wherein Cox and Arayashiki do not disclose the plurality of elements is configured to provide a baseband filter. Chang disclose a plurality of elements (190, 210, 220) is configured to provide a baseband filter (260; fig. 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the filter of Cox be implemented in a baseband circuit in order to reduce the level of intermodulation distortion in the frequency band of the baseband signal as suggested by Chang (col 4, lines 53-59).

Regarding claim 25, Cox discloses a reconfigurable filter (11) comprising: a plurality of elements (13-17, 19-23) including a configurable element (14-16) and configured to provide a filter circuit (13-17, 19-23) based on an interconnection of the plurality of elements, the configurable element (14-16) including at least two filter components (15, 16) and a switch (14) configured to selectively couple one of the at least two filter components (15, 16) to the rest of the filter circuit (17 of stage 1, 13-17 of stage 2&3, 19-23); and a switch control module (32) configured to generate a switch control signal (control input signal to switch 14) to control the switch (14) in the configurable element (14-16) to selectively switch between two filter components (15 and

16), a value of the configurable element (15, 16) based in part on the switch control signal (page 2, column 2, line 113 - page 3, col 1, line 46).

Cox does not disclose the filter is implemented in an RF integrated circuit having a multimode frequency response, the circuit comprising: an amplifier configured to receive an RF signal; a mixer coupled to the output of the amplifier and configured to frequency convert the RF signal, and the reconfigurable filter coupled to the output of the mixer. Chang discloses an RF integrated circuit (fig. 1) having a multimode frequency response, the circuit comprising: an amplifier (140) configured to receive an RF signal; a mixer (150) coupled to the output of the amplifier (140) and configured to frequency convert the RF signal, and a reconfigurable filter (250, 260) coupled to the output of the mixer (150). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the filter of Cox be implemented in an RF integrated circuit of Chang in order to reduce distortion and aliasing in a received signal of a receiver circuit. Cox and Chang do not disclose a switch control signal comprising a pseudo random bit sequence. Arayashiki discloses a switch control signal comprising a pseudo random bit sequence (abstract; paras. 11-21; fig. 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a pseudo random bit sequence switch in order to switch according to a random clock pulse sequence of the pseudo random control signal.

5. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cox and Arayashiki (JP 2002-359543).

Regarding claim 21, Cox discloses a method of configuring a filter response, the method comprising:

determining a first filter response corresponding to a first switch configuration of at least one configurable element (15); determining a second filter response corresponding to a second switch configuration of the at least one configurable element (16); determining a desired filter response having a frequency response between the first filter response and the second filter response (page 3, lines 25-46; page 2, lines 83-93); selectively switching (via 14) between the first switch configuration and the second switch configuration to produce the desired filter response (page 2, lines 40-65).

Cox does not disclose determining a fractional switching time that produces the desired filter response; and selectively switching between the first switch configuration and the second switch configuration based on a pseudo random switching signal that controls the switches to the first switch configuration for the fractional switching time. In related art, Arayashiki discloses determining a fractional switching time that produces the desired filter response; and selectively switching between the first switch configuration and the second switch configuration based on a pseudo random switching signal that controls the switches to the first switch configuration for the fractional switching time (see abstract; paras. 11-21; fig. 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to switch in/out the pseudo random signal from a first configuration to another configuration in order to randomly

switch the filter input based on a clock pulse sequence of the pseudo random control signal as suggested by Arayashiki.

6. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cox in view Chang et al (US 6,975,846) (hereinafter Chang) in view of Petrov et al (US 2004/0,196,934) (hereinafter Petrov) and further in view of Arayashiki (SU 771,891B).

Regarding claim 26, Cox discloses a reconfigurable filter comprising: at least one configurable element (14) having a value based in part on a fractional period in which a control signal is at a first signal level (figs. 3&5) (page 2, lines 40-65); and a filter element (15, 16) coupled to the at least one configurable element to produce a filter circuit (11); and a switch controller configured to generate a mode select signal that controls, in part, the fractional period in which the control signal is at the first signal level. Cox does not disclose a baseband processor integrated circuit having a multimode frequency response, the integrated circuit comprising a demodulator coupled to the output of the reconfigurable filter; and a baseband processor coupled to the output of the demodulator and configured to generate a mode select signal that controls, in part, the fractional period in which the control signal is at the first signal level. In the same field of endeavor, Chang disclose a baseband processor integrated circuit (410, 430) (fig. 4) having a multimode frequency response, the integrated circuit comprising a demodulator (570) coupled to the output of the filter (590); and a baseband processor (DSP) coupled to the output of the demodulator (570) (col 2, lines 35-43). It would have been obvious to one of ordinary skill in the art

at the time the invention was made to have the filter of Cox be implemented in the baseband processor of Chang in order to reduce intermodulation distortion and aliasing in the baseband signal as suggested by Chang. Even though Chang do not disclose the demodulator, filter, and baseband processor are on one IC, it is well known to integrated all the components on one IC. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have one IC in order to eliminate the need for two chips in one receiver. Cox and Chang do not disclose the baseband processor is configured to generate a mode select signal that controls the filter response. Petrov discloses a baseband processor (136) configured to generate a mode select signal that controls the filter response (para. 17). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the baseband processor control the filter in order to program the filter based on the desired mode of operation as suggested by Petrov. Cox, Chang, and Petrov do not disclose a pseudo random control signal. In related art, Arayashiki discloses a switch control signal comprising a pseudo random bit control signal (abstract; paras. 11-21; fig. 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a pseudo random bit control signal in order to switch according to a random clock pulse sequence.

1. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cox in view of Arayashiki (SU 771,891B).

Regarding claim 13, Cox discloses a reconfigurable filter 11 (fig. 6) comprising:

a first configuration of elements (15, 17) configured to provide a first filter response; a second configuration of elements (16, 17) configured to provide a second filter response different from the first filter response; at least one switch (14) configured to selectively switch between the first configuration (15, 17) and the second configuration (16, 17); and a switch control module (32) configured to generate at least one switch control signal (control signal to 11) comprising a sequence to control the position of the at least one switch (14) (page 2, column 2, line 113 - page 3, col 1, line 46). Cox does not disclose a pseudo random switch control signal. Arayashiki discloses the switch control module comprises a pseudo random switch control signal (abstract; paras. 11-21; fig. 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a pseudo random switch control signal in order to switch according to a random clock pulse sequence.

7. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cox in view of Arayashiki (SU 771,891B) in view of Wang (US 6,351,229). Regarding claim 14, Cox and Arayashiki disclose the reconfigurable filter of claim 13, wherein Cox and Arayashiki do not disclose the switch control module comprises a pseudo random modulator. Wang discloses the switch control module comprises a pseudo random modulator (fig. 3A, 7A,B column 4, line 39 – col 6, line 45; col 11, line 23-42). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the pseudo random modulator in order to have a specific type of generator to generate a pseudo random sequence control signal.

8. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cox and Arayashiki and further in view of Wang (US 6,351,229).

Regarding claim 15, Cox and Arayashiki disclose the reconfigurable filter of claim 13, wherein Cox and Arayashiki do not specifically disclose a switch control module is a delta sigma modulator. Wang disclose a switch control module is a delta sigma modulator (fig. 3A, 7A,B column 4, line 39 – col 6, line 45; col 11, line 23-42). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the delta sigma modulator in order to have a specific type of generator to generate a pseudo random sequence control signal.

9. Claims 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cox, Arayashiki, Wang and further in view of Yassa et al (US 5,181,033) (hereinafter Yassa).

Regarding claim 16, Cox, Arayashiki, and Wang disclose the reconfigurable filter of claim 15, wherein Cox disclose the switch controller comprises switch control frequency greater than a passband frequency of the first filter response (figs. 3, 5). Cox, Arayashiki and Wang do not specifically disclose the delta sigma modulator comprises a latch clocked at a rate greater than a passband frequency of the first filter response. Yassa disclose a delta sigma modulator clocked at a rate greater than the passband frequency of the filter response (col 2, lines 26-43). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the delta sigma modulator clocked at a higher rate in order to allow the filter to have controllably

variable filter characteristics without changing the filter hardware as suggested by Yassa.

Regarding claim 17, Cox, Arayashiki, and Wang disclose the reconfigurable filter of claim 15, wherein Cox disclose the switch controller comprises switch control frequency greater than a passband frequency of the first filter response (figs. 3, 5). Cox, Arayashiki, and Wang do not specifically disclose the delta sigma modulator comprises a latch clocked at a rate greater than a passband frequency of the first filter response. Yassa disclose the delta sigma modulator comprises a latch clocked at a rate that lies outside a passband of the first and second filter responses (col 2, lines 26-43). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the delta sigma modulator clocked at a higher rate in order to allow the filter to have controllably variable filter characteristics without changing the filter hardware as suggested by Yassa.

10. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Swaminathan et al (hereinafter Swaminathan) in view of Cox in view of the admitted prior art and further in view of Arayashiki.

Regarding claim 18, Swaminathan disclose a reconfigurable filter (fig. 5) comprising: an element (stage 2) comprising: a first filter component (CXre) in series with a first switch (see switch in series with CXre of figure 5); and a second filter component (CXim) in series with a second switch (second switch in series with Cxim; fig. 5), the second filter component and second switch connected in parallel with the first filter component and first switch (CXre branch

and CXim branch in parallel; see fig. 5). Swaminathan do not specifically disclose the filter components is configurable, at least one fixed filter element arranged with the configurable element to produce a filter circuit and a switch control module configured to generate a pseudo random switch control signal to control the first and second switches to selectively switch between the first and second switch components. In the same field of endeavor, Cox discloses a configurable filter element (15, 16), at least one fixed filter element (17) arranged with the configurable element (15, 16) to produce a filter circuit (11) (page 3, col 1, lines 5-10); and a switch control module (32) configured to generate switch control signal to control the first and second switches to selectively switch between the first and second switch components (page 2, lines 40-65). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a fixed element, a configurable filter element and a switch control module in Swaminathan in order to provide an element that is fixed along with the filter that's variable based on the switching signal within commonly known filter circuits. Swaminathan and Cox do not disclose a pseudo random switch control signal. Arayashiki discloses the switch control module comprises a pseudo random switch control signal (abstract; paras. 11-21; fig. 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made for Swaminathan and Cox to have a pseudo random switch control signal in order to provide a pseudo random switching signal.

Regarding claim 19, Swaminathan, Cox and Arayashiki disclose the reconfigurable filter of claim 18, wherein a value of the configurable element is

based at least in part on a fractional allocation of the pseudo random switch control signal to a first signal level (Cox page 2, lines 40-65; Arayashiki, abstract).

11. Claims 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cox in view of Arayashiki in view of Rawlins et al (US 2003/0,224,752) (hereinafter Rawlins).

Regarding claim 22, Cox and Arayashiki disclose the method of claim 21, wherein Cox and Arayashiki do not disclose the first filter response comprises a broad filter configuration. In related art, Rawlins disclose adjusting the filter to a broad bandwidth configuration (filter is adapted and capable of having greater bandwidth values; para. 188). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a wide filter configuration in order to allow more frequencies to pass to obtain a desired filter response.

Regarding claim 23, Cox and Arayashiki disclose the method of claim 21, wherein Cox and Arayashiki do not explicitly disclose the second filter response comprises a narrow filter configuration. However, based on the switching control signal the filter can be configured to have a narrow filter configuration. In related art, Rawlins disclose adjusting the filter to a narrow bandwidth configuration (para. 188). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a narrow filter configuration in order to conserve bandwidth and to filter out more of the noise components.

Response to Arguments

12. Applicant's arguments with respect to claims 1-26 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lana N. Le whose telephone number is (571) 272-7891. The examiner can normally be reached on M-F 10:00-18:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis A. Kuntz can be reached on (571) 272-7499. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Lana N. Le/
Primary Examiner, Art Unit 2614